



III THE FINANCIAL SYSTEM

3 FINANCIAL MARKETS AND GLOBAL FINANCIAL INSTITUTIONS

The announcement and allotment by the Eurosystem of two three-year longer-term refinancing operations (LTROs) was critical in boosting confidence in money markets, as well as in debt and equity markets. Reduced liquidity risk for the euro area banking sector coincided with a fall in implied volatility in sovereign bond markets, while the corporate sector has benefited from stronger investor interest and a favourable funding environment. Some of this improved sentiment appears to have been transitory, however: after a broad-based rally, financial sector equity investors, in particular, have corrected their positive initial risk assessment since the middle of March 2012.

Global large and complex banking groups (LCBGs) have generally benefited from an improvement in market sentiment in early 2012. At the same time, subdued revenue expectations, along with little adjustment in operating expenditure, weigh on future profitability. In early 2012 the investment performance of hedge funds recovered and funding liquidity pressures appeared to be contained, while the use of financial leverage remained moderate.

3.1 CONTINUING TENSIONS IN MONEY AND CAPITAL MARKETS

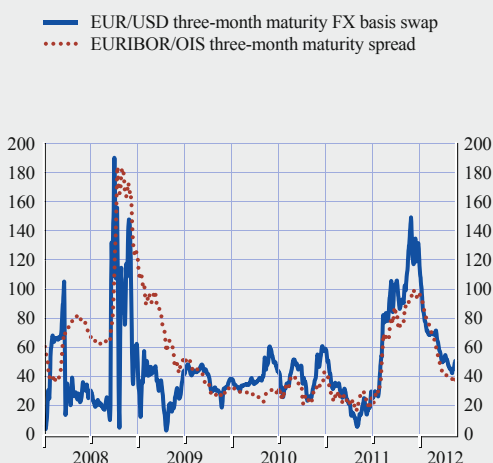
MONEY MARKETS

Tensions in the euro area money market – which had reached high levels towards the end of 2011 – subsided following the rapid unwinding which accompanied the announcement and, in particular, the subsequent allotment of the Eurosystem’s two three-year LTROs (see Charts 3.1 and S.4.1 and Box 4). Taken together, the two operations, allotting €489 billion to 523 credit institutions on 21 December 2011 and €530 billion to 800 credit institutions on 29 February 2012, resulted in a net liquidity injection of €521 billion given the operations maturing in the weeks of the allotment of these LTROs. The broadened participation, in particular for the second operation, implied bids by smaller banks participating for relatively small amounts, providing key support for the smaller institutions that are crucial for the financing of euro area small and medium-sized enterprises.

Some continued tensions in money markets following three-year LTROs...

Chart 3.1 EURIBOR/OIS spread and the EUR/USD basis swap

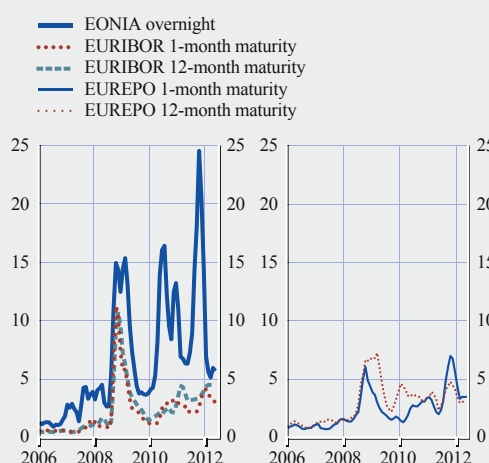
(Jan. 2008 – May 2012; basis points)



Sources: European Banking Federation and Bloomberg.

Chart 3.2 Cross-country standard deviation of average unsecured lending and repo rates

(Jan. 2006 – May 2012; basis points; two-month moving average)



Sources: European Banking Federation and ECB calculations.

... with lower liquidity and perceived counterparty risk...

... but activity in the unsecured market is still subdued...

... albeit amid some easing in segmentation

The two three-year LTROs mitigated liquidity risk and thereby supported market sentiment across money market segments. While some of these effects may prove to be temporary, they provided timely and critical support to lower both liquidity and perceived counterparty risk in the euro money market. Perhaps most notably, EURIBOR/OIS spreads reversed their widening trend from last year and tightened substantially (see Chart 3.1). At the same time, there is still some divergence between unsecured money market interest rates and the interbank offered rates provided by banks (see Chart 3.2).¹

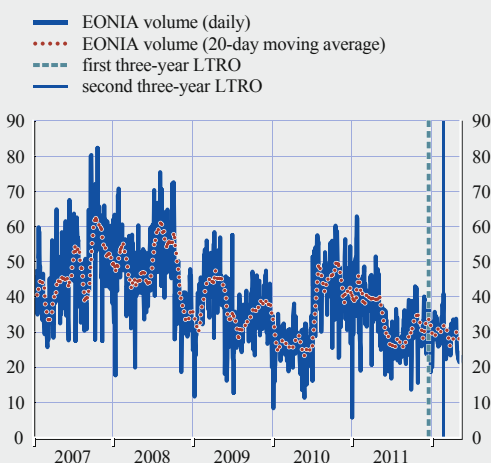
Notwithstanding some improvement, overall activity in money markets, in particular in the unsecured segment, has remained relatively subdued (see Chart 3.3). This lower activity level appears to reflect a broader structural shift in money market activity towards the secured market since the beginning of the financial crisis. Most recently, volumes in the unsecured market have come down slightly after the allotment of the three-year LTROs, whereby current EONIA volumes have declined to a daily turnover of around €25 billion. Outside the overnight segment, turnover has remained very limited.

In the secured money market segment, the two three-year LTROs have contributed to reducing the market segmentation which had intensified in the second half of 2011 as a result of the sovereign debt crisis (see also Section 4.3.1). Perhaps representative in this respect was a decline in the spread between the “core” country collateral rates and rates based on Italian as well as Spanish government bond collateral. Indeed, there was an extremely sharp reversal after the first three-year operation of the progressively rising trend observed in the latter half of 2011, indicating that the funding of Italian and Spanish government bond positions in the repo market has become much cheaper (see Chart 3.4). Despite the temporary reversal in price developments, the relative scarcity of collateral and collateral margining requirements have, among other factors, contributed to relatively subdued interbank activity in the repo market.

¹ According to the EURIBOR Technical Features, a “representative panel of banks provide daily quotes of the rate, rounded to three decimal places, that each panel bank believes one prime bank is quoting to another prime bank for interbank term deposits within the euro zone” (see http://www.euribor-ebf.eu/assets/files/Euribor_tech_features.pdf).

Chart 3.3 EONIA volumes

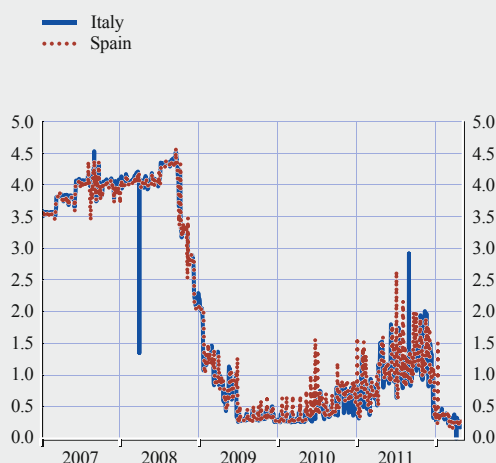
(Jan. 2011 – May 2012; EUR billions)



Source: ECB.

Chart 3.4 Italian and Spanish overnight repo market rates

(Jan. 2007 – May 2012; percentages)



Sources: MTS and Banco de España.

This aggregate improvement was also evident at longer money market maturities – with a notable rise in the outstanding amounts of short-term European paper (STEP) issued by euro area monetary financial institutions. Outstanding amounts for all maturities reached a level of approximately €400 billion in March 2012 (€382 billion as of mid-May 2012), the highest since May 2010. More specifically, for the “longer” maturities of this segment, activity has picked up in relative terms, with amounts outstanding for the 101-200 day and the 201-366 day segments doubling to €76 billion and €52 billion, respectively, in the first few months of 2012.

Similar to the euro money market, liquidity remains abundant in the US dollar money market. The ECB’s non-standard policy measures, including the prolongation of swap lines with the Federal Reserve at reduced pricing (which serves as an effective backstop facility), have improved market conditions for euro area banks in accessing US dollar liquidity since the end of 2011 (see also Section 4.1). This is most visible in the significant decline of EUR/USD basis swap rates (see Chart 3.1), as well as the continuous gradual decline in the USD LIBOR rates and in spreads with overnight index swap (OIS) rates.

Box 4

ASSESSING STRESS IN INTERBANK MONEY MARKETS AND THE ROLE OF UNCONVENTIONAL MONETARY POLICY MEASURES

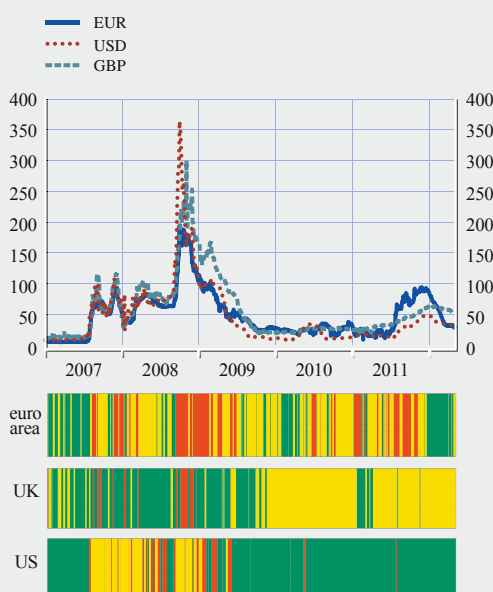
Interbank money markets have exhibited intermittent stress since the onset of the financial turmoil in mid-2007 – tensions at times extreme, reflecting both counterparty and liquidity risk. Central bank policy measures, and in particular extraordinary non-standard ones, have made a strong contribution to stemming liquidity-related pressures in interbank markets. This box presents a means of measuring the intensity of such pressures, and thus the unwillingness of banks to grant unsecured loans. It then focuses on conditions over recent months in the euro money market and in particular the impact of the Eurosystem’s three-year LTROs announced in December 2011, or more specifically an estimate of how stress may have evolved in the *absence* of this policy measure.

The analysis is based on a frequently used measure of interbank market stress, that is, the spread between unsecured interbank money market rates (the London interbank offered rate, or LIBOR, as a proxy) and a corresponding measure for a risk-free interest rate (here the overnight index swap (OIS) rate). This spread is allowed to traverse a number of regimes, affiliation to which is expressed by means of probabilities that are estimated by a Markov-switching model.¹ Chart A visualises the resulting probabilities in the form of a heat map for the euro, pound sterling and US dollar markets. It illustrates that intermittent periods of strong funding stress appear to have characterised the euro money market during the escalation of sovereign tensions (and in particular over much of 2011), in contrast to relative stability – albeit not free of stress entirely – in other major money markets. It is particularly noteworthy that, following the announcement of the Eurosystem’s three-year LTROs in late 2011, tensions clearly eased in the euro money market.

¹ Specification tests suggest that three regimes should be set, as the model dynamics (i.e. coefficients) are different to conventional levels of significance across all three regimes.

Chart A Funding conditions in interbank money markets

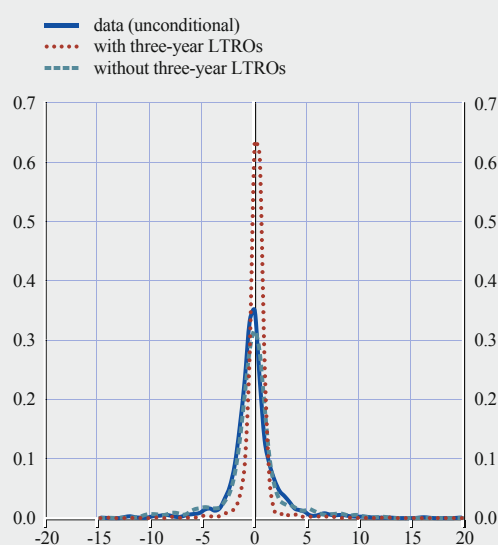
(Jan. 2007 – May 2012; basis points; three-month LIBOR/OIS spread)



Sources: Bloomberg and ECB calculations.
Note: Red indicator points to rising, yellow to moderating and green to falling pressure in the respective markets.

Chart B Kernel density distributions conditional on the three-year LTROs

(y-axis: density; x-axis: three-month LIBOR/OIS spread in basis points)



Sources: Bloomberg and ECB calculations.
Note: Based on a simulated path (stochastic simulation for 10,000 days) from the regime-switching model with a LTRO-dependent transition matrix.

The model is then used to conduct a series of counterfactual simulations to assess the role played by the anticipation of unconventional policy action in the euro area, in this case the Eurosystem's three-year LTRO announcement of December 2011. Specifically, making the model-inferred transition probabilities between regimes a function of this specific policy measure provides an assessment of the extent to which it has contributed to more stable funding conditions in the euro money market.² The model set-up is used to simulate artificial market data under the counterfactual assumption of the three-year LTROs having been versus not having been conducted.

² Technically, this conditioning is accomplished by introducing a binary dummy to the otherwise conventional first-order Markov-chain process, with the dummy marking the announcement date of the three-year LTROs on 8 December 2011.

Long-run regime probabilities and distributional statistics of the LIBOR/OIS spread as a function of three-year LTROs

		Overall spread		Liquidity		Credit	
		LTRO=OFF	LTRO=ON	LTRO=OFF	LTRO=ON	LTRO=OFF	LTRO=ON
Long-run probabilities	Rising	30%	6%	26%	12%	35%	56%
	Flat	53%	16%	35%	17%	35%	41%
	Falling	17%	78%	39%	71%	10%	3%
Distributional statistics	Mean	0.05	-0.30	0.01	-0.16	0.02	0.02
	STDEV	2.78	1.09	2.59	1.46	1.16	1.41
	Skew	0.06	2.79	0.07	-0.01	0.01	-0.07
	IQ range	1.65	0.68	2.07	1.97	0.76	1.13

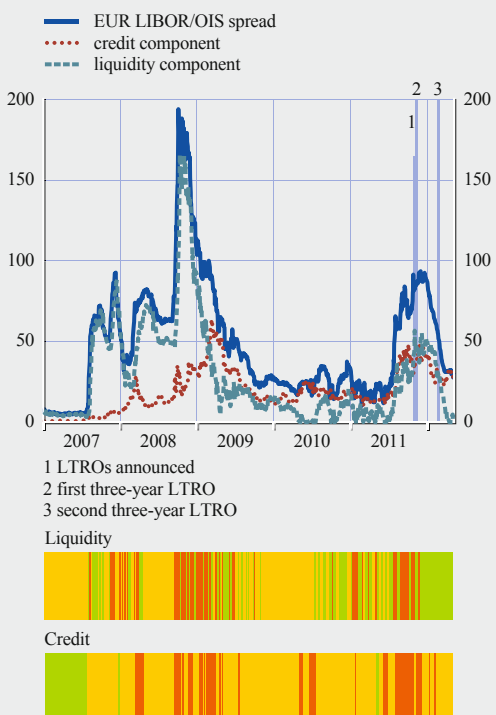
LTRO-conditional regime-switching probabilities, as well as summary statistics for the distributions of the simulated euro market spreads, are summarised in the table above. For the overall spread, the underlying simulated distributions are plotted in Chart B. In addition, the overall spread has been decomposed into its credit and liquidity components and the counterfactual simulations have been run on them separately (see Chart C).³

The long-run weight (probability) associated with the falling pressure regime increases significantly upon conditioning on the three-year LTRO. The distributional statistics suggest that it was able to compress the spread and reduce the volatility in euro money markets substantially, with the reduction in the standard deviation equalling about 54%.

The analysis in this box suggests that the three-year LTROs led to a significant reduction of the stress that had characterised the euro money market over much of 2011. The impact was, according to the estimates, primarily achieved via a compression of the LIBOR/OIS spread's liquidity component.

Chart C Decomposition of the three-month euro LIBOR/OIS spread and related heat maps

(Jan. 2007 – May 2012; basis points)



Sources: Bloomberg and ECB calculations.
Note: Red indicator points to rising, yellow to moderating and green to falling pressure on the respective spreads.

³ The decomposition entails two steps: (i) for the LIBOR panel of banks, one-year credit default swap spreads are scaled to the three-month horizon and then used to infer risk-neutral probabilities of default (PDs) under the assumption of 60% losses given default (LGDs); (ii) an average across the panel is assumed to proxy the credit premium, and the remaining spread to the LIBOR minus a measure of the risk-free rate (here the OIS) is assumed to reflect all non-credit factors, including a premium associated with liquidity risk. A number of caveats of this methodology are discussed e.g. in Bank of England, *Quarterly Bulletin*, 2007 (see also the references therein) and F. Heider, M. Hoerova and C. Holthausen, "Liquidity hoarding and interbank market spreads: the role of counterparty risk", *ECB Working Paper Series*, No 1126, 2009.

GOVERNMENT BOND MARKETS

Government bond markets have been subject to continued tensions since the end of last year, most notably in countries under sovereign stress (see Chart 3.5). In this context, market preferences for assets perceived to be both liquid and safe have continued to prevail. This has led to some segmentation in the euro area government bond market – whereby subdued yields in some jurisdictions as part of a flight to safety have contrasted with relatively high yields in others where concerns linger on factors ranging from political uncertainty to the interaction of sovereign and financial sector fragilities.

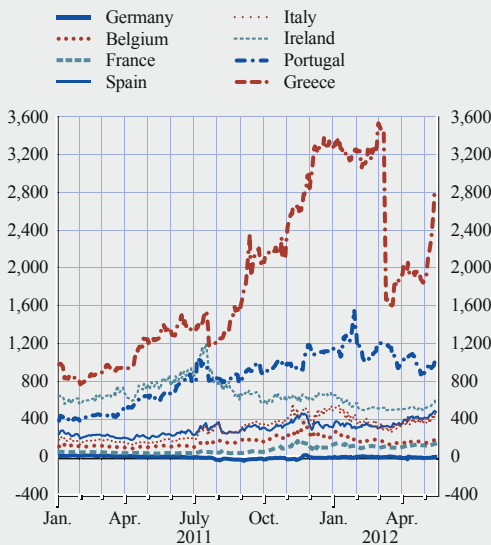
Notwithstanding this volatility in yields, aggregate sovereign bond market uncertainties in the euro area have decreased substantially since late 2011 to reach levels similar to those observed in the United States (see Chart 3.7). Two factors appear to have contributed to this decline.

Continued tensions in euro area government bond markets...

... albeit amid abating implied volatility ...

Chart 3.5 Spread between ten-year euro area sovereign bond yields and the ten-year overnight index swap

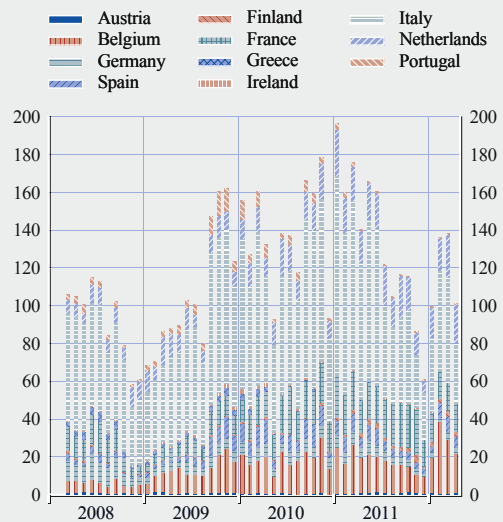
(Jan. 2011 – May 2012; basis points)



Sources: Bloomberg and ECB calculations.
Note: The euro overnight index swap rate, rather than German government bond yields, was used in order to account for the impact of flight-to-safety flows into German government bonds.

Chart 3.6 Traded volumes of euro area sovereign bonds on the MTS platform

(Mar. 2008 – Apr. 2012; EUR billions)



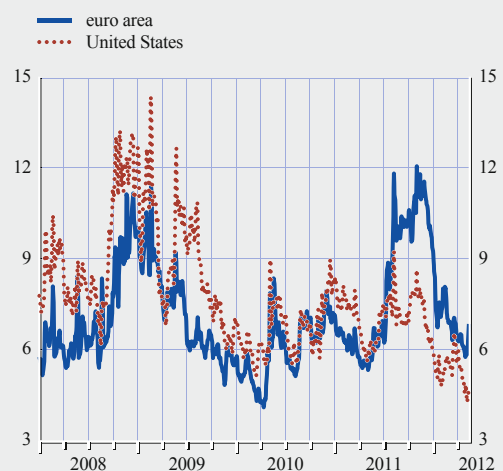
Source: MTS.

First, the Eurosystem's two three-year LTROs not only played a significant role in alleviating funding strains in the financial sector, but also provided broader support to market confidence (see Box 5), including in the sovereign bond market. This latter effect was most pronounced in early 2012, when overall volumes rebounded from a level comparable to the period around the Lehman Brothers episode, near to levels reached in early 2010 (see Chart 3.6). Second, there has been progress with several political initiatives including, in particular, an agreement on the so-called "fiscal compact" and strengthened euro area firewalls. In addition to this, the triggering of Greek sovereign credit default swaps (CDSs) in the context of the Greek debt exchange was viewed by many commentators as a needed validation of this hedging tool more generally for sovereign exposure.

Notwithstanding this decline in implied market volatility, euro area government bond market sentiment remains fragile. This has been most

Chart 3.7 Implied bond market volatility in the euro area and the United States

(Jan. 2008 – May 2012; percentages; three-day moving average)



Source: Bloomberg.
Notes: Implied government bond volatility is a measure of uncertainty over the short term (up to three months) for German and US ten-year government bond prices. It is based on the market values of related traded options contracts. Bloomberg uses implied volatility of the closest to at-the-money strikes for both puts and calls using near-month expiry futures.

... while sentiment remains fragile

Chart 3.8 Euro area long-term government bond yield and nominal GDP growth expectations

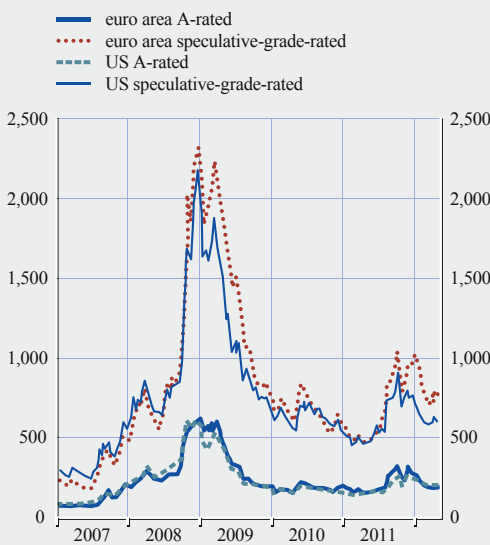
(Jan. 1999 – May 2012; percentages)



Sources: Thomson Reuters Datastream, Consensus Economics and ECB calculations

Chart 3.9 Corporate bond spreads in the euro area and the United States

(Jan. 2007 – May 2012; basis points)



Source: Bank of America Merrill Lynch.
Note: Option-adjusted spreads of corporate bond indices (average maturity of six to ten years).

clearly demonstrated by some renewed sovereign bond market tensions since April 2012 on account of political uncertainty twinned with concerns about financial sector health in specific entities and jurisdictions. These factors have led to some renewal in the climate of risk aversion – though government bond yields in countries under stress have generally remained below the peaks witnessed at the end of 2011. Moreover, risks related to underlying macroeconomic prospects appear to have been progressively priced into bonds (see Chart 3.8). This, in turn, has muted the immediate impact of sovereign rating downgrade decisions – most evident in the sovereign downgrades in early 2012, which did not trigger strong initial market reactions.

CREDIT MARKETS

A search for euro area investment opportunities by market participants in an environment of incipient returning risk appetite is likely to have contributed to the observed narrowing of corporate credit spreads in both the high-yield and high-rated segments over the last six months (see Chart 3.9 and S.3.1).

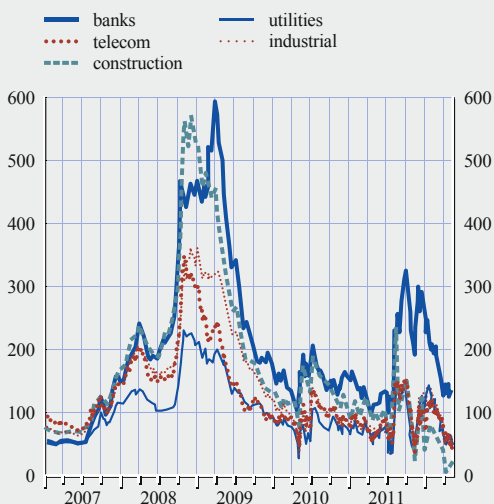
The general credit spread reduction across all corporate sectors was most significant for the banking sector, with spreads falling by half from a peak of over 300 basis points in late November 2011 in the weeks following the implementation of the three-year LTROs (see Chart 3.10). In parallel, the highly rated corporate bond spreads in the euro area reached a level comparable to their equivalents in the United States.

Liquidity inflow into credit markets...

... providing the corporate sector with a favourable funding environment

Chart 3.10 Corporate bond spreads for selected sectors in the euro area

(Jan. 2007 – May 2012; basis points)



Source: iBoxx.

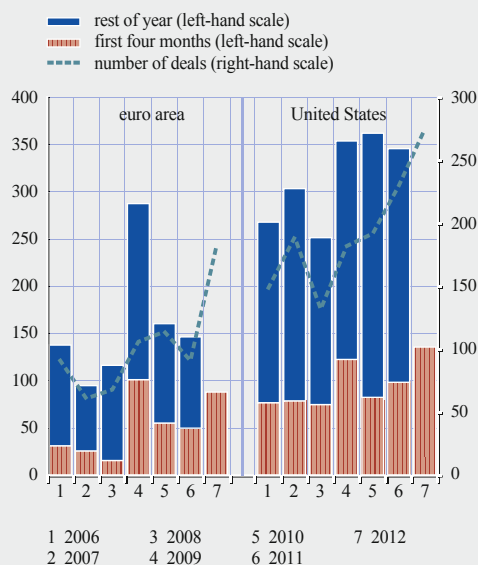
Market participants appear to have dissociated the risk assessments for sovereign and corporate issuers, as sovereign CDS and corporate spreads have been barely correlated over recent months. In this context, investors appear even to have judged that corporate yields observed in the market are higher for a comparable level of credit risk (see Box 3 in Section 2). Indeed, the latest information on corporate bond issuance tends to confirm a rise over the first four months of 2012. This increase was more pronounced in the euro area than in the United States, with the number of deals having almost doubled compared with the same period in 2011 (see Chart 3.11).

EQUITY MARKETS

While equity markets rallied strongly in the euro area and also in the United States from December 2011 to mid-March 2012, a correction has been evident since then, affecting the euro area financial sector in particular (see Chart 3.12). The surge in the early part of the year appears to have stemmed from the Eurosystem's three-year LTROs, which strongly influenced market

Chart 3.11 Bond issuance by non-financial corporations (all rating classes)

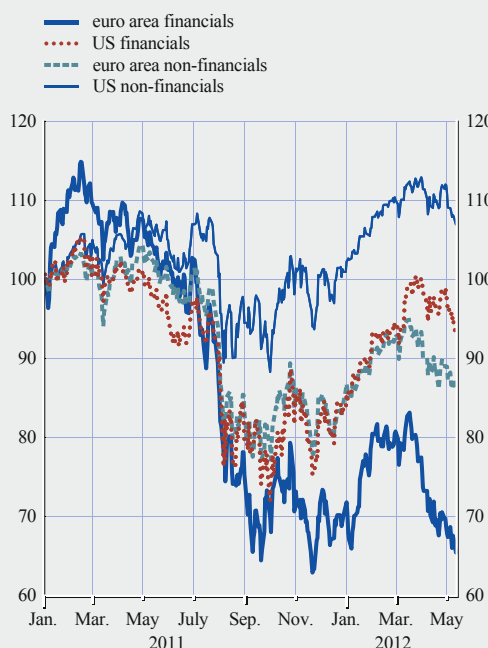
(Jan. 2006 – Apr. 2012; issuance in EUR billions and number of deals)



Sources: Dealogic and ECB calculations.

Chart 3.12 Equity price developments for financial and non-financial stocks in the euro area and the United States

(Jan. 2011 – May 2012; index: Jan. 2011 = 100)

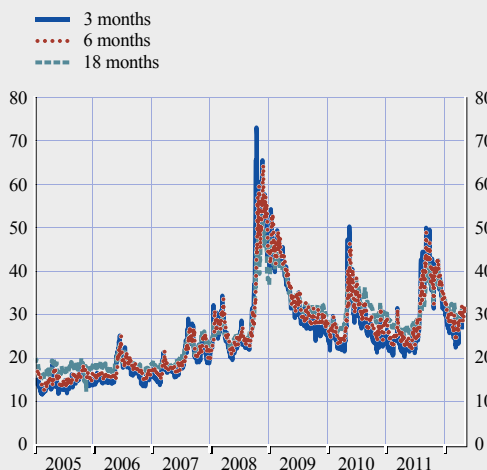


Source: Thomson Reuters.

sentiment - not only through the easing of funding constraints on the banking sector but also as part of a broader confidence shock. These effects, however, appear to have dissipated in recent months amidst rising risk aversion. Stock market volatility has mirrored these developments, decreasing substantially in early 2012 and having picked up since late March 2012 (see Chart 3.13). Implied stock market distributions have also reflected the described trends in market sentiment: tail risks decreased initially at the beginning of 2012, uncertainty (as measured by implied volatility) diminished and negative asymmetries decreased, pointing to a change in market participants' views towards a more balanced risk assessment in terms of expected factors shaping the positive and/or negative sides of returns distributions (see Box 5). This is confirmed by the fact that the term structure of implied volatility returned to a configuration of uncertainty increasing with the time horizons associated with normal times (see Chart 3.13). Latest data point to increased risk aversion, while volatility remains clearly below the levels seen at the peak of crisis episodes.

Chart 3.13 Implied volatility for the euro area stock market at different horizons

(Jan. 2005 – May 2012; percentages)



Source: Thomson Reuters.

... with risk assessments becoming more balanced

Box 5

THE IMPACT OF THE LONGER-TERM REFINANCING OPERATIONS ON MONEY MARKET OPTIONS

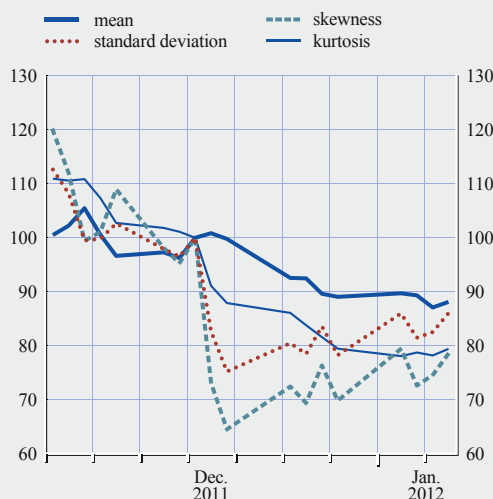
The Eurosystem's December 2011 and February 2012 three-year longer-term refinancing operations (LTROs) targeted deficiencies in bank term funding markets, and were instrumental in preventing a credit crunch that could have compromised the maintenance of price stability in the euro area. Notwithstanding the clear and targeted objective of this policy action, it appears to have reverberated well beyond the banking system and into the broad financial system. This, in turn, appears to have stemmed from its inherent boost to market confidence, and more specifically its effect of removing the distributional "tail risk" of an extreme event occurring in the economic and financial environment.

This box focuses on the measurement of such tail risk and uncertainty. Positive confidence shocks, such as the one linked to the LTROs, are expected to be reflected in risk-implied probability densities extracted from option prices, as such data embody market participant expectations.¹ To understand the extent to which the most recent non-standard measures (the three-year LTROs) have had an impact on market confidence, first the statistical moments of the implied

¹ For a detailed description of the implied distribution methodology applied by the ECB, see J.M. Puigvert-Gutiérrez and R. de Vincent-Humphreys, "A Quantitative Mirror On The Euribor Market Using Implied Probability Density Functions", *Eurasian Economic Review*, 2(1), 2012.

Chart A EURIBOR three-month implied probability distribution moments around the first LTRO

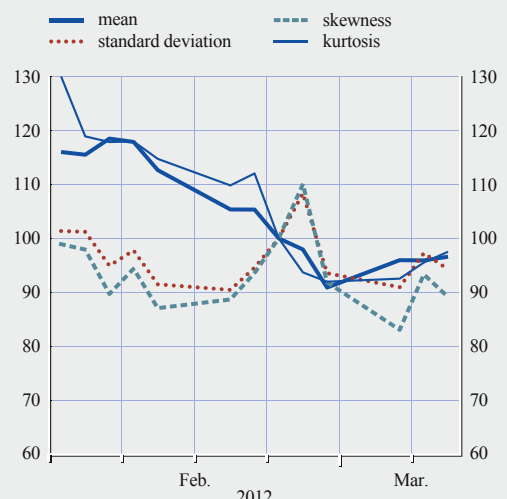
(index: 21 December 2011 = 100)



Sources: Bloomberg and ECB calculations.

Chart B EURIBOR three-month implied probability distribution moments around the second LTRO

(index: 29 February 2012 = 100)



Sources: Bloomberg and ECB calculations.

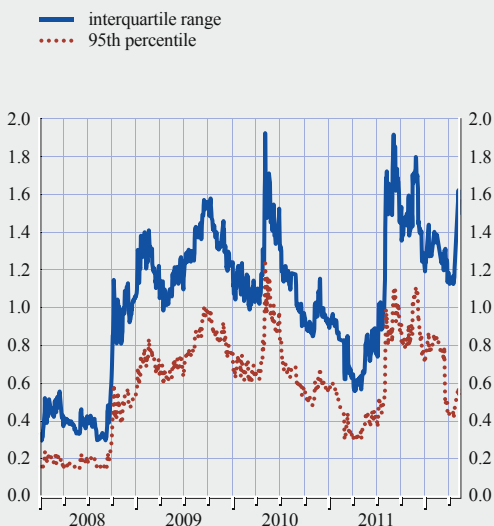
distributions for the three-month EURIBOR around the two LTROs and subsequently the time series of two implied distribution characteristics are analysed. To begin with, the focus is on tail risk, i.e. the probability of an event far away from average expectations. Practically, this implies examining an extreme quantile of the option-implied risk/return probability distribution – calibrated here to be the 5% or 95% quantile. Second, such analysis is complemented with a measure of uncertainty, or a measure of how spread out the distribution of market expectations is from the mean. This again implies in practical terms an examination of the interquantile range of the option-implied risk/return probability distribution – calibrated here to be the mass of the distribution falling between the 95% and 5% quantile.

Charts A and B show the behaviour of the statistical moments of the EURIBOR three-month probability distributions around the LTRO dates. A decrease of the skewness indicates a tendency for market participants to expect future interest rates to be below the mean rather than above it; the lower kurtosis suggests that the likelihood that market participants attach to more extreme outcomes compared with outcomes at the centre of the density has declined. This is especially evident after the first LTRO, but seems to be less pronounced for the second LTRO.

The above analysis of a changing distribution over time is corroborated by a more detailed view of the dynamics of specific segments of the return distributions (see Charts C and D). For both markets (upper tail risk for the money market and lower tail risk for the equity market), three distinct periods of tension can be identified as having given rise to significant tail risk and uncertainty. First, the failure of Lehman Brothers in September 2008 was followed by heightened tail risks: market participants priced with a risk of 5% a positive 60 basis point jump in the EURIBOR and decreases by 52% and 45% for the Dow Jones EURO STOXX 50 index and the Dow Jones EURO STOXX bank index, respectively, in the subsequent three months. These jumps in tail risk were associated with a broader interquantile range, thus more uncertainty. A second period of tensions appeared in May 2010, associated with the initial stages of the euro area

Chart C EURIBOR: extreme quantile and interquartile range

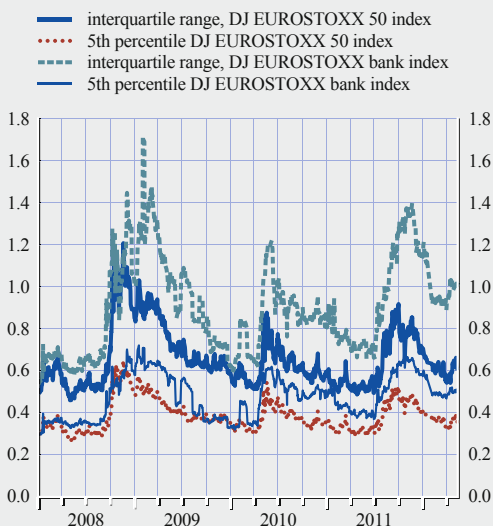
(Jan. 2008 – May 2012)



Sources: Bloomberg and ECB calculations.

Chart D Stock markets: extreme quantile and interquartile range

(Jan. 2008 – May 2012)



Sources: Bloomberg and ECB calculations.

sovereign debt crisis. While this led to an initial spike in tail risk and uncertainty, this quickly dissipated in the context of a relatively positively perceived economic outlook, along with policy actions (such as the ECB's non-standard measures and measures announced by European governments). Such improvements in tail risk and uncertainty came to a sudden halt in July 2011, when the tail risk and uncertainty associated with EURIBOR rose back to its May 2010 level, while the stock market tail risk and uncertainty were close to levels right after the failure of Lehman Brothers. Most recently, the first three-year LTRO at the end of December 2011 appears to have been a turning point for both markets, with lower tensions, even though the level of each indicator was still high and it remains to be seen whether their decrease will be confirmed in the coming months: the most recent increase in these indicators shows that financial market risks can still be sharply and quickly reassessed by market participants.

All in all, implied distributions drawn from options on European money and equity markets suggest a decisive recent role played by policy action in curbing the risk of extreme events and, more generally, uncertainty. Their historical evolution suggests, however, that such impacts can be short-lived – which in the current context implies a strong need for concrete action on the part of governments and banks following the Eurosystem's three-year LTROs to secure a lasting improvement in economic and financial fundamentals.

3.2 SUBDUED REVENUE PROSPECTS FOR GLOBAL FINANCIAL INSTITUTIONS

GLOBAL LARGE AND COMPLEX BANKING GROUPS²

Sentiment towards global LCBGs generally improved at the beginning of this year, mirroring the improvements witnessed in their euro area counterparts. Factors driving this improved sentiment included some greater optimism, albeit guarded, concerning global and in particular US macroeconomic prospects, as well as spillovers from policy action in Europe, notably the three-year LTROs and their implications of reduced counterparty risks for global banks.

At the same time, the operating environment of the main global LCBGs, which include banks in the United States, the United Kingdom and Switzerland, has nonetheless remained challenging. In particular, those banks with legacy exposures to real estate price corrections may still be subject to credit risks, while ongoing regulatory reforms aimed at strengthening the financial system are frequently cited by market participants as potentially weighing on performance. The same factors that have affected profitability in recent quarters are expected to also strongly influence the outlook for global LCBGs – namely, counterparty risk perceptions, credit risk stemming from exposures to continuing real estate corrections, and a changing regulatory environment.

Financial soundness of global large and complex banking groups

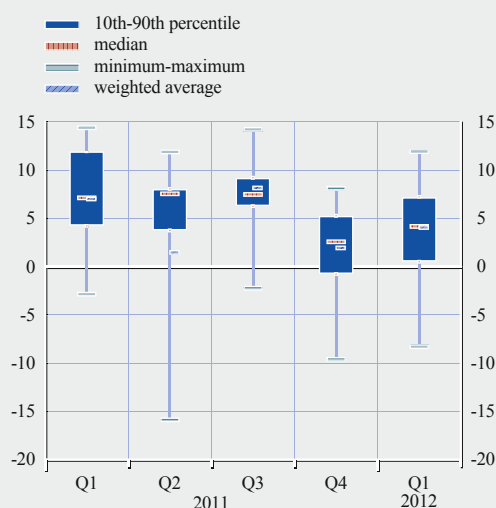
The profitability of global LCBGs decreased substantially in the fourth quarter of 2011, albeit with varied performance across institutions. Although return on equity slightly improved in the first quarter of this year, it is still below the level observed at the beginning of last year (see Chart 3.14). In the United States, weakening profitability was related to higher market volatility driven by European developments which hampered the banks' fee businesses. In the United Kingdom, escalating tensions in the euro area in late 2011 spilled over to some extent, while overall income was hit by higher impairments on loans to countries still suffering from crisis-related property market corrections. Furthermore, all UK banks considered suffered some losses from mis-sold payment protection insurance. Swiss banks, in contrast to their international peers, underperformed owing to the restructuring of their business models through the disposal of risk-weighted assets in an environment of relatively depressed market prices.

The aggregate developments in profitability across all global LCBGs towards the end of 2011 appear to have been strongly influenced by a fall in trading income related to the intensification

Profitability has declined

Chart 3.14 Return on shareholders' equity for global large and complex banking groups

(Q1 2011 – Q1 2012; percentages)

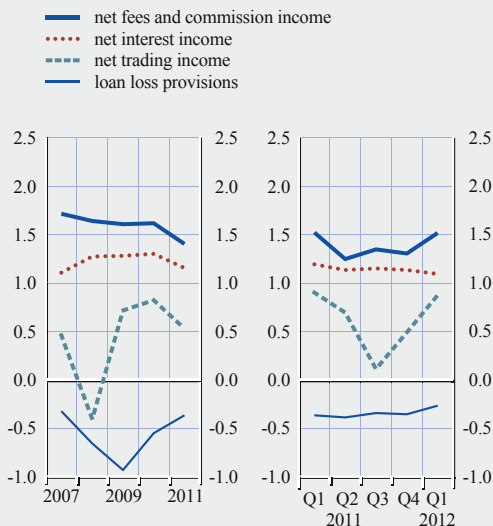


Sources: Individual banks' reports and ECB calculations.
Notes: Quarterly ratios are based on available data for a subsample of LCBGs for which results for all quarters are available. Quarterly results have been annualised.

2 For a discussion on how global LCBGs are identified, see Box 10 in ECB, *Financial Stability Review*, December 2007. The institutions included in the analysis presented here are Bank of America, Bank of New York Mellon, Barclays, Citigroup, Credit Suisse, Goldman Sachs, HSBC, JP Morgan Chase & Co., Lloyds Banking Group, Morgan Stanley, Royal Bank of Scotland, State Street and UBS. However, not all figures were available for all companies.

Chart 3.15 Decomposition of the operating income and loan loss provisions for global large and complex banking groups

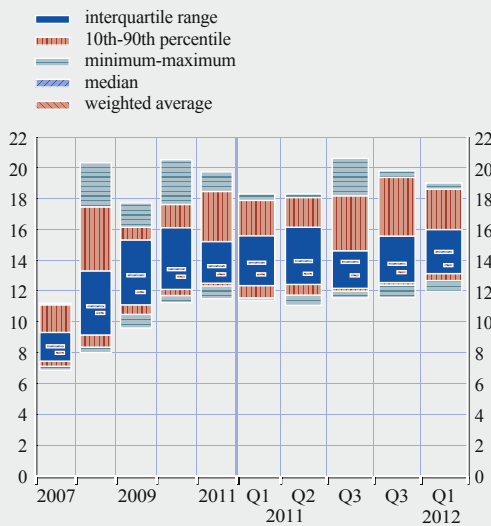
(2007 – Q1 2012; percentages)



Sources: Individual banks' reports and ECB calculations.
Notes: Quarterly ratios are based on available data for a sub-sample of LCBGs for which results for all quarters are available. Quarterly results have been annualised.

Chart 3.16 Tier I capital ratios of global large and complex banking groups

(2007 – Q1 2012; percentages)



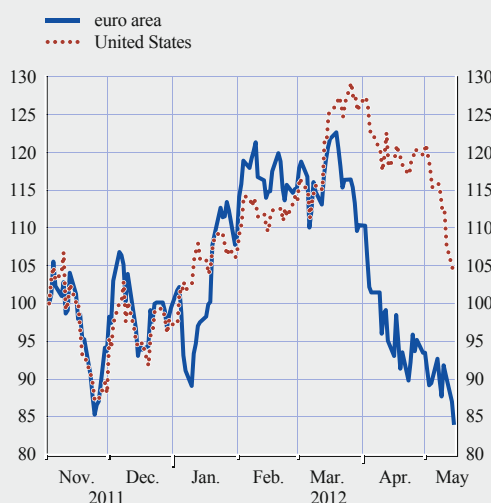
Sources: Individual banks' reports and ECB calculations.
Notes: Quarterly ratios are based on available data for a sub-sample of LCBGs for which results for all quarters are available. Quarterly results have been annualised.

of euro area sovereign strains. In the first quarter of this year trading income rebounded. Net fee and commission income continued to suffer at the end of 2011 from lower activity in mergers and acquisitions, lower transaction volumes and lower levels of client activities, but recovered somewhat in the first quarter of 2012 (see Chart 3.15). Net interest income, by contrast, remained broadly stable. Consequently, cost-cutting might become a major theme in 2012. However, so far, no significant expense cuts have been observed. On the contrary, in the fourth quarter of 2011 the weighted average of operating expenses even increased.

The Tier 1 capital ratios of global LCBGs remained broadly unchanged throughout last year and in the first quarter of 2012 (see Chart 3.16). At the beginning of this year, attention shifted to regulators' assessments of capital needs – including those in the United States and the United Kingdom. In the United States, the Federal Reserve's stress test of 19 US banks – the so-called Comprehensive Capital Analysis and Review (CCAR) – included an approval of most banks' capital plans, and was generally interpreted as indicative of sound balance sheets and robust capital. Market

Chart 3.17 Stock prices of US and euro area large and complex banking groups

(Nov. 2011 – May 2012; index: Nov. 2011 = 100)



Sources: Bloomberg and ECB calculations.

Capital buffers remain unchanged

Spillovers from equity price developments among global LCBGs

reaction to the publication of results in mid-March 2012 was very favourable, as reflected in strong share price performance (see Chart 3.17). Regulators in the United Kingdom, by contrast, asked banks to raise more capital, as they remained concerned that capital was not yet at levels that would ensure resilience in the face of prospective risks.

This evolution of fundamentals was associated with a significant improvement in the stock prices of global LCBGs in early 2012, with US banks leading the way (see Chart 3.17). Indeed, the observed developments during this period appear to correspond to historical patterns whereby equity prices for US LCBGs exhibit leading indicator properties for their European counterparts. This relationship between the share prices of US and euro area LCBGs can also be analysed more formally based on statistical tests in connection with an empirical model using a co-integrated VAR model that is estimated based on daily data for aggregated share prices of euro area and US LCBGs as well as the USD/EUR exchange rate. The results of these tests imply that past movements in stock prices of US LCBGs are closely linked to future movements in euro area LCBGs, whereas the converse is not true.

Since mid-March, however, the share prices of euro area LCBGs witnessed more pronounced declines compared with those of US LCBGs. This could be explained by a deterioration in the euro area economic outlook at that time, with associated sudden negative impacts on the banks' earnings outlook, as well as the resurgence in sovereign stress in the euro area. Nevertheless, the tight correlation between US and euro area share prices remains intact, which is reflected by the two trend lines in Chart 3.18.

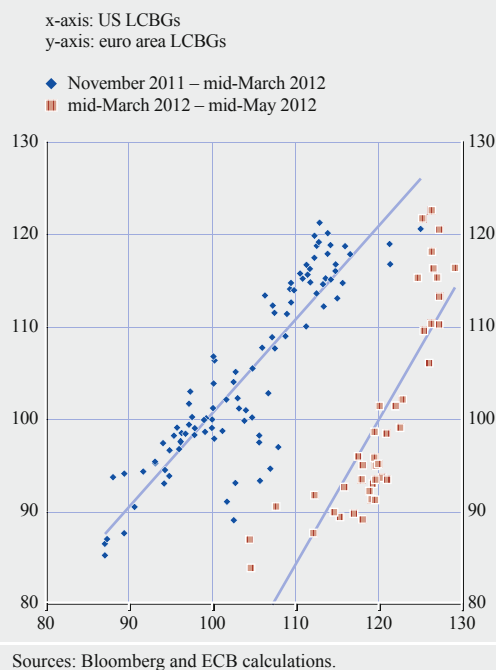
HEDGE FUNDS

Investment performance and exposures

The average cumulative investment performance of hedge funds, both for the sector as a whole and for most broadly defined investment strategies, was quite good during the first four months of 2012, despite some minor losses in April 2012 (see Chart 3.19). Many investment strategies more than recouped investment losses suffered in 2011. Hedge funds, especially those pursuing investment strategies with a directional bias, benefited from asset price gains in a wide range of financial markets globally in the first quarter of 2012 and managed to capture a significant proportion of asset price increases. It remains to be seen, however, and this is quite important for the long-term growth of the sector, how much call option-like downside protection hedge funds will manage to provide for their investors under less favourable market conditions.

Chart 3.18 Relationship between stock prices of US and euro area large and complex banking groups

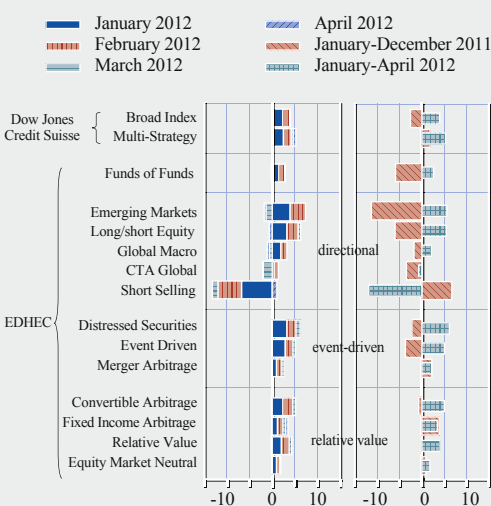
(Nov. 2011 – May 2012; index: Nov. 2011 = 100; daily observations)



Investment performance of hedge funds recovered in 2012...

Chart 3.19 Global hedge fund returns

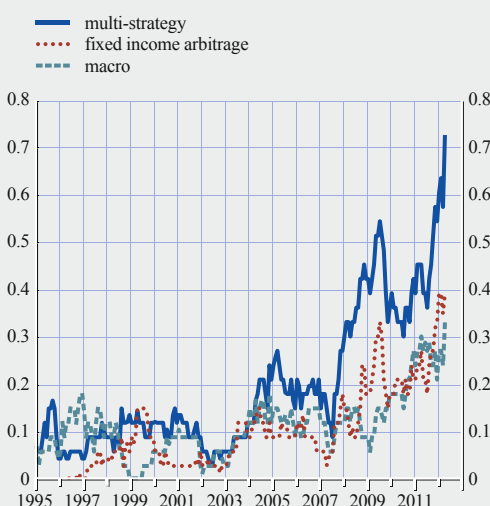
(Jan. 2011 – Apr. 2012; percentage returns, net of all fees, in USD)



Sources: Bloomberg, EDHEC Risk and Asset Management Research Centre and ECB calculations.
Notes: EDHEC indices represent the first component of a principal component analysis of similar indices from major hedge fund return index families. “CTA global” stands for “Commodity Trading Advisors”; this investment strategy is also often referred to as managed futures.

Chart 3.20 Medians of pair-wise correlation coefficients of monthly global hedge fund returns within strategies

(Jan. 1995 – Apr. 2012; Kendall’s τ_c correlation coefficient; percentage monthly returns, net of all fees, in USD; moving 12-month window)



Sources: Lipper TASS database and ECB calculations.

The estimated similarity of hedge funds’ investment positioning within broadly defined investment strategies and thus the associated risk of simultaneous and disorderly collective exits from crowded trades appeared to have either increased or remained high, in particular for some investment strategies with a directional investment bias. At the end of April 2012 moving median pair-wise correlation coefficients of the investment returns of hedge funds within investment strategies – a measure of the possible crowding of hedge fund trades – reached their respective all-time highs in the case of multi-strategy, macro and event-driven strategies and was very close to all-time highs for long/short equity hedge and fixed income arbitrage strategies (see Chart 3.20).

Funding liquidity risk and leverage

According to various estimates, investor net flows into the hedge fund sector resumed in the first quarter of 2012, supported by positive investment returns in the same period. Demand for hedge fund investments by institutional investors remained strong, not least because of low nominal yields on traditional debt investments, and many institutional investors continued to report their intentions to further increase allocations to hedge funds and other alternative investments.

All this implied limited near-term funding liquidity pressures associated with large investor redemptions, as also suggested by the forward redemption indicator shown in Chart 3.21. According to this indicator, forward redemption notifications received from investors, measured as a percentage of the total capital under management of covered hedge funds, were somewhat lower than in 2011. Forward redemption notifications and the resulting investor withdrawals exhibit strong seasonality because many single-manager hedge funds allow their investors to redeem money no more frequently than quarterly and sometimes even only semi-annually or annually.

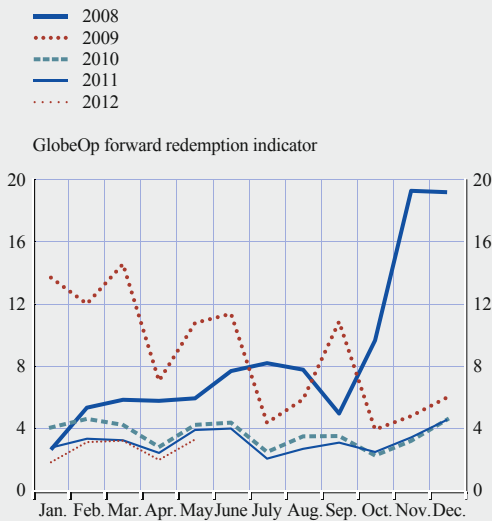
... while the estimated possible crowding of directional trades increased

Investor inflows resumed...

... implying limited investor redemption pressures in the near term

Chart 3.21 Near-term redemption pressures

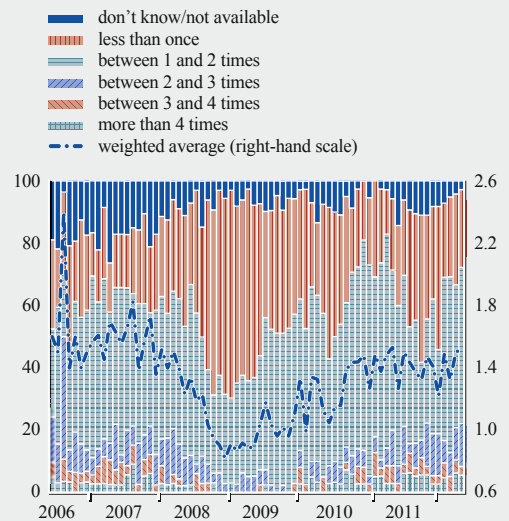
(Jan. 2008 – May 2012; percentage of hedge fund assets under administration that investors plan to withdraw)



Source: GlobeOp.
 Notes: Assets under administration refer to the sum of the net asset value (capital under management) of all hedge funds administered by GlobeOp. Data are based on actual redemption notices received by the 12th business day of the month. Investors may, and sometimes do, cancel redemption notices. Unlike subscriptions, redemption notifications are typically received up to 90 days in advance of the redemption date, depending on individual fund redemption notice requirements. In addition, the establishment and enforcement of redemption notification deadlines may vary from fund to fund.

Chart 3.22 Hedge fund leverage

(June 2006 – May 2012; percentage of responses and weighted average leverage)



Source: Bank of America Merrill Lynch, "Global Fund Manager Survey".
 Notes: Leverage is defined as a ratio of gross assets to capital. In 2011 and 2012 the number of responses varied between 32 and 48.

The risk of cuts in bank financing did not seem to have increased either...

... while the use of financial leverage remained moderate

Possible funding liquidity pressures associated with withdrawals of short-term financing provided by banks did not seem to have increased either and thus also pointed to limited potential for a forced unwinding of investment positions. According to the Federal Reserve System's March 2012 survey on US primary dealers' financing terms³, price and non-price terms for US dollar-denominated securities financing and OTC derivatives transactions with hedge funds eased somewhat, on balance, over the three-month period ending in February 2012, thereby reversing the net tightening reported in the previous survey (see also the sub-section on counterparty credit risk in Section 4.1.2). Anecdotal evidence, however, suggested that owing to new liquidity and capital requirements, at least some prime brokers were considering passing higher financing and trading costs on to hedge fund clients, although reportedly none of the prime brokers wanted to be the first to make such a step.

The same Federal Reserve survey, following similar results in two earlier surveys, also revealed that, on a net basis, the use of financial leverage by hedge funds decreased, as did the availability of additional (and currently unutilised) financial leverage under existing agreements between dealers and hedge fund clients. Moderate aggregate leverage (see Chart 3.22), nonetheless, does not exclude the possibility that some hedge funds might resort to a more aggressive use of financial leverage. Benchmark interest rates, which together with a spread make up an effective borrowing rate, were low and quite a lot of hedge funds remained below their high watermarks, thereby presenting incentives for some hedge funds to increase risk-taking.

³ See Federal Reserve Board, "Senior Credit Officer Opinion Survey on Dealer Financing Terms", March 2012.